

WHAT IS CLAIMED:

1           1. An additive for use in making a rubber  
2 elastomer, the additive comprising:  
3           at least 20% by weight and up to about 29% by  
4 weight of gray slate flour;  
5           at least 18% by weight and up to about 28% by  
6 weight of corn starch;  
7           at least 4% by weight and up to about 8% by weight  
8 of liquid polyester;  
9           at least 10% by weight and up to about 20% by  
10 weight of calcium carbonate; and  
11           at least 8% by weight and up to about 15% by  
12 weight of silica gel;  
13           wherein the aggregate amount of the gray slate  
14 flour, cornstarch, liquid polyester, calcium carbonate  
15 and silica gel totals 100%; and  
16           wherein the additive is combined with a rubber  
17 elastomer to create a rubber elastomer composition.

1           2. The additive of claim 1, wherein the additive  
2 comprises about 29% by weight of gray slate flour.

1           3. The additive of claim 2, wherein the additive  
2 comprises about 28% by weight of corn starch.

1           4. The additive of claim 2, wherein the additive  
2 comprises about 8% by weight of liquid polyester.

1           5. The additive of claim 4, wherein the additive  
2 comprises about 20% by weight of calcium carbonate.

1           6. The additive of claim 5, wherein the additive  
2 comprises about 15% by weight of silica gel.

1           7. The additive of claim 6, wherein the silica  
2 gel is in the form of pellets.

1           8. The additive of claim 6, wherein the silica  
2 gel is in the form of powder.

1           9. The additive of claim 1, wherein the rubber  
2 elastomer is selected from the group consisting of  
3 natural rubber, isoprene, chloroprene, halo-butyls, SBR  
4 rubber, butyl rubber, neoprene, epichlorohydrin rubber,  
5 polysulfonated rubber, silicone rubber and mixtures  
6 thereof.

1           10. A method of producing an additive for a  
2 rubber elastomer, comprising the steps of:  
3           combining about 29% by weight of gray slate flour,  
4 about 28% by weight of corn starch, about 8% by weight  
5 of liquid polyester, about 20% by weight of calcium  
6 carbonate, and about 15% by weight of silica gel;  
7           mixing the components together;  
8           allowing the components to react to form an  
9 additive that increases the tensile strength, and  
10 crescent tear of rubber elastomers; and  
11           adding the additive to a rubber elastomer.

1           11. The method of claim 10, wherein the rubber  
2 elastomer is selected from the group consisting of  
3 natural rubber, isoprene, chloroprene, halo-butyls, SBR  
4 rubber, butyl rubber, neoprene, epichlorohydrin rubber,

5 polysulfonated rubber, silicone rubber and mixtures  
6 thereof.

1 12. A rubber elastomer composition comprised of:  
2 an additive, wherein the additive comprises;  
3 about 29% by weight of gray slate flour, about 28%  
4 by weight of cornstarch, about 8% by weight of liquid  
5 polyester, about 20% by weight of calcium carbonate,  
6 and amount 15% by weight of silica gel; and  
7 a rubber elastomer, wherein the rubber elastomer  
8 is selected from the group consisting of natural  
9 rubber, isoprene, chloroprene, halo-butyls, SBR rubber,  
10 butyl rubber, neoprene, epichlorohydrin rubber,  
11 polysulfonated rubber, silicone rubber and mixtures  
12 thereof.

1 13. An additive for use in making a rubber  
2 elastomer, the additive comprising:  
3 from about 10 to about 30% by weight gray slate  
4 flour;  
5 from about 10 to about 35% by weight corn starch;  
6 from about 5 to about 15% by weight epoxidized  
7 soybean oil;  
8 from about 10 to about 40% by weight calcium  
9 carbonate; and  
10 from about 5 to about 15% by weight of a fatty  
11 acid selected from the group consisting of stearic acid  
12 and oleic acid;  
13 wherein the aggregate amount of the gray slate  
14 flour, corn starch, epoxidized soybean oil, calcium  
15 carbonate and fatty acid totals 100%; and  
16 wherein the additive is combined with a rubber  
17 elastomer to create a rubber elastomer composition.

1           14. The additive of claim 13, wherein the  
2 additive comprises about 25% by weight of gray slate  
3 flour.

1           15. The additive of claim 14, wherein the  
2 additive comprises about 25% by weight of corn starch.

1           16. The additive of claim 15, wherein the  
2 additive comprises about 5% of epoxidized soybean oil.

1           17. The additive of claim 13, wherein the  
2 additive comprises:  
3           from about 20 to about 30% by weight gray slate  
4 flour;  
5           from about 20 to about 30% by weight corn starch;  
6           from about 5 to about 10% by weight epoxidized  
7 soybean oil;  
8           from about 20 to about 37% by weight calcium  
9 carbonate; and  
10          from about 8 to about 15% by weight of a fatty  
11 acid selected from the group consisting of stearic acid  
12 and oleic acid;  
13          wherein the aggregate amount of the gray slate  
14 flour, corn starch, epoxidized soybean oil, calcium  
15 carbonate and fatty acid totals 100%; and  
16          wherein the additive is combined with a rubber  
17 elastomer to create a rubber elastomer composition.

1           18. The additive of claim 13, wherein the  
2 additive comprises:  
3           about 25% by weight gray slate flour;  
4           about 25% by weight corn starch;

5       about 5% by weight epoxidized soybean oil;  
6       about 35% by weight calcium carbonate; and  
7       about 10% by weight of a fatty acid selected from  
8       the group consisting of stearic acid and oleic acid;  
9       wherein the aggregate amount of the gray slate  
10      flour, corn starch, epoxidized soybean oil, calcium  
11      carbonate and fatty acid totals 100%; and  
12      wherein the additive is combined with a rubber  
13      elastomer to create a rubber elastomer composition.

1       19. The additive of claim 13, wherein the rubber  
2      elastomer is selected from the group consisting of  
3      natural rubber, isoprene, chloroprene, halo-butylys, SBR  
4      rubber, butyl rubber, neoprene, epichlorohydrin rubber,  
5      polysulfonated rubber, silicone rubber and mixtures  
6      thereof.

1       20. A method of producing an additive for a  
2      rubber elastomer, comprising the steps of:  
3       combining from about 10 to 30% gray slate flour,  
4       from about 10 to about 35% corn starch, from 5 to about  
5       15% epoxidized soybean oil, from about 10 to about 40%  
6       calcium carbonate and from about 5 to about 15% of a  
7       fatty acid selected from the group consisting of  
8       stearic acid and oleic acid;  
9       mixing the components together;  
10      allowing the components to react to form an  
11      additive; and  
12      adding the additive to a rubber elastomer.

1           21. The method of claim 20, wherein said  
2 elastomer is selected from the group consisting of  
3 natural rubber, isoprene, chloroprene, halo-butyls, SBR  
4 rubber, butyl rubber, neoprene, epichlorohydrin rubber,  
5 polysulfonated rubber, silicone rubber and mixtures  
6 thereof.

1           22. A rubber elastomer composition comprised of:  
2 an additive, wherein the additive comprises:  
3 gray slate flour, corn starch, epoxidized soybean  
4 oil, calcium carbonate, and a fatty acid selected from  
5 the group consisting of stearic acid and oleic acid;  
6 and  
7 a rubber elastomer selected from the group  
8 consisting of natural rubber, isoprene, chloroprene,  
9 halo-butyls, SBR rubber, butyl rubber, neoprene,  
10 epichlorohydrin rubber, polysulfonated rubber, silicone  
11 rubber and mixtures thereof.

1           23. The composition of claim 22, wherein said  
2 additive comprises from about 10 to 30% gray slate  
3 flour, from about 10 to about 35% corn starch, from 5  
4 to about 15% epoxidized soybean oil, from about 10 to  
5 about 40% calcium carbonate and from about 5 to about  
6 15% of fatty acid selected from the group consisting of  
7 stearic acid and oleic acid.

1           24. An additive for use in making a rubber  
2 elastomer, the additive comprising:  
3 from about 10 to about 30% by weight of a  
4 comminuted shale/slate predominately formed of  
5 aluminum, magnesium and/or iron silicates;  
6 from about 10 to about 35% starch;

7 from about 5 to about 15% of a reactive resin;  
8 from about 10 to about 40% of a metal carbonate;  
9 from about 5 to about 15% of an acidic component  
10 selected from the group consisting of silica gel and  
11 fatty acids;

12 wherein the aggregate amount of the comminuted  
13 shale/slate, starch, reactive resin, metal carbonate  
14 and acidic component totals 100%; and

15 wherein the additive is combined with a rubber  
16 elastomer to create a rubber elastomer composition.

1 25. The composition of claim 24, wherein said  
2 resin is liquid polyester resin.

1 26. The composition of claim 24, wherein said  
2 resin is selected from the group consisting of octyl  
3 epoxy tallate, epoxidized natural rubber, epoxidized  
4 Bisphenol A, styrene oxide, 1,2-epoxy-3-phenoxypropane,  
5 epoxidized soybean oil and epoxidized linseed oil.

1 27. A method of producing an additive for a  
2 polymeric material comprising the steps of:  
3 combining from about 10 to 30% gray slate flour,  
4 from about 10 to about 35% corn starch, from 5 to about  
5 15% epoxidized soybean oil, from about 10 to about 40%  
6 calcium carbonate and from about 5 to about 15% of a  
7 fatty acid selected from the group consisting of  
8 stearic acid and oleic acid;

9 mixing the components together;

10 allowing the components to react to form an  
11 additive; and

12 adding the additive to a polymeric material.